

Name \_\_\_\_\_

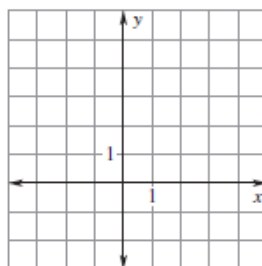
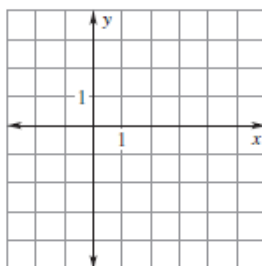
Date \_\_\_\_\_

**CHAPTER**  
**9****Chapter Test A***For use after Chapter 9*

The vertices of  $\triangle ABC$  are  $A(-1, 1)$ ,  $B(1, 3)$  and  $C(2, -1)$ .  
Graph the image of the triangle using prime notation.

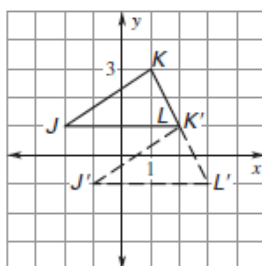
1.  $(x, y) \rightarrow (x + 2, y - 3)$

2.  $(x, y) \rightarrow (x - 1, y + 1)$

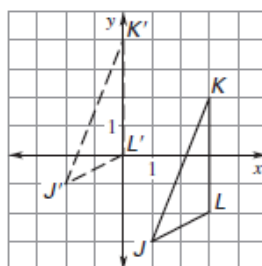


$\triangle JK'L'$  is the image of  $\triangle JKL$  after a translation. Write a rule for the translation.

3.



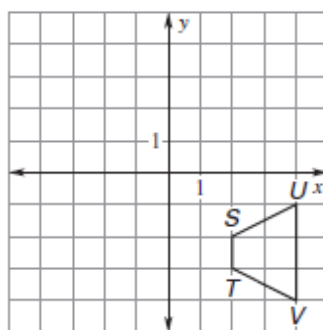
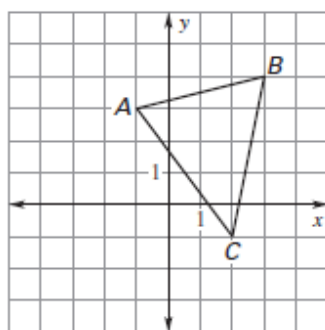
4.



Rotate each figure the given number of degrees counterclockwise about the origin. List the coordinates of the vertices of the image.

11.  $90^\circ$

12.  $180^\circ$



In Exercises 13 and 14, the vertices of  $\triangle ABC$  are  $A(-4, 4)$ ,  $B(-1, 2)$ , and  $C(-4, 1)$ . Find the vertices of  $\triangle A''B''C''$  after a composition of the transformations in the order they are listed.

13. Translation:  $(x, y) \rightarrow (x + 3, y - 2)$

Translation:  $(x, y) \rightarrow (x - 1, y + 4)$

14. Translation:  $(x, y) \rightarrow (x + 2, y + 1)$

Reflection: in the  $x$ -axis**Answers**

1. See left.

2. See left.

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

any

**Answers**

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

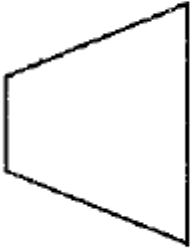
15. \_\_\_\_\_

16. \_\_\_\_\_

17. \_\_\_\_\_

**How many lines of symmetry does the figure have?**

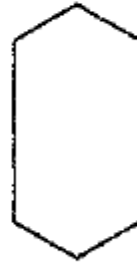
**15.**



**16.**

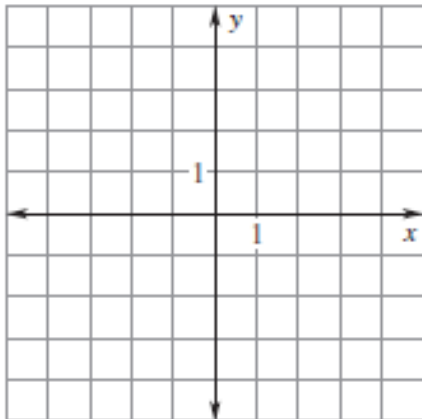


**17.**

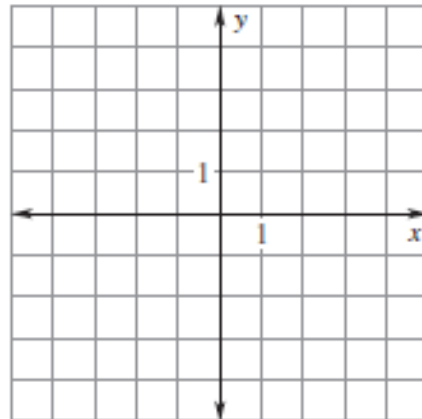


**The vertices of  $\triangle PQR$  are  $P(-2, 3)$ ,  $Q(1, 2)$ , and  $R(-3, 0)$ . Translate  $\triangle PQR$  using the given vector. Graph  $\triangle PQR$  and its image.**

**3.  $\langle 2, -2 \rangle$**



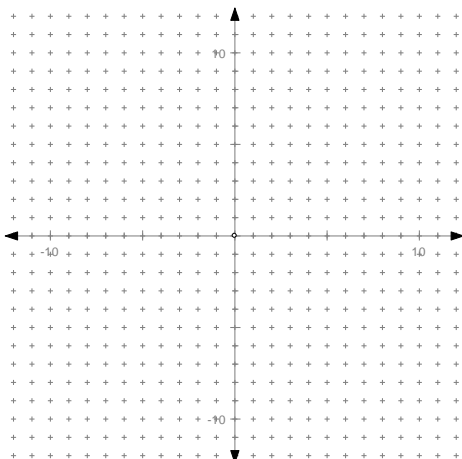
**4.  $\langle -1, -3 \rangle$**



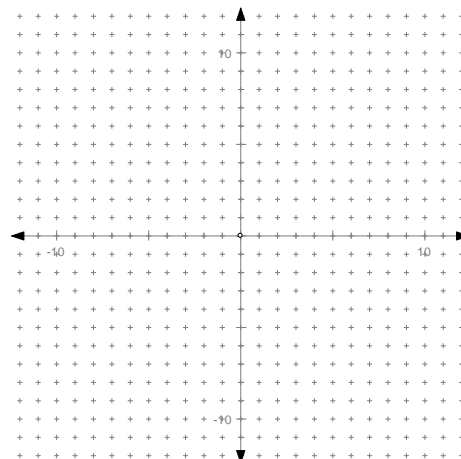
5. Graph the preimage and image of  $\triangle ABC$  reflected in the line  $x = 4$ . A (2, 3) B(4, -1) C(0, -3)

6. Graph the preimage and image of  $\triangle ABC$  reflected in the line  $y = x$ . A (2, 3) B(4, -1) C(0, -3)

5.



6.



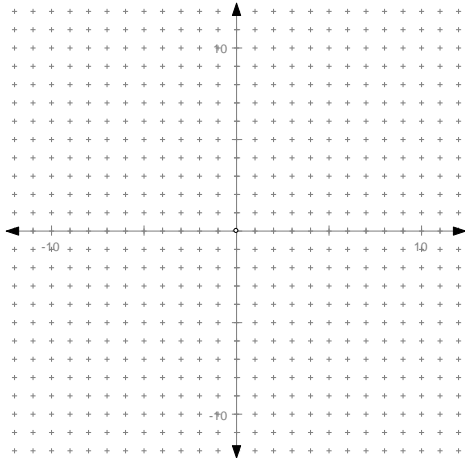
7. Graph the preimage and image of  $\triangle ABC$  dilated about the origin with a ratio of 2.

A (2, 3) B(4, -1) C(0, -3)

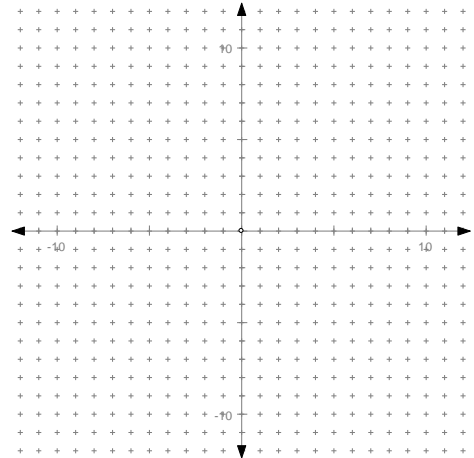
8. Graph the preimage and image of  $\triangle ABC$  dilated about the point(-1, 2) with a ratio of 2.

A (2, 3) B(4, -1) C(0, -3)

7.



8.



9. Write the following vectors in component form.

$\overrightarrow{AB}$  A(6, 0) B(10, -4)

$\overrightarrow{CD}$  C (8, -6) D(5, 2)

Use the picture to the right for the following questions.

10. What is the image of H rotated  $90^\circ$  about G? \_\_\_\_\_

11. What is the image of H rotated  $180^\circ$  about G? \_\_\_\_\_

12. What is the image of H rotated  $270^\circ$  clockwise about G? \_\_\_\_\_

13. What is the image of H rotated  $90^\circ$  about I? \_\_\_\_\_

